

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2018****Subject Code: 2172307****Date: 29/11/2018****Subject Name: FRP Technology and composites****Time: 10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

**MARKS**

- Q.1** (a) (1) Resin injection molding is an intermediate process between \_\_\_\_\_ molding and \_\_\_\_\_ molding. **03**  
 (2) List any two inhibitors used for the Polyester resin.  
 (3) \_\_\_\_\_ techniques is used for manufacturing pipes, tubes, cylinders and spheres.
- (b) (1) Gel coat resins contain a \_\_\_\_\_ additive to prevent runs and sags from forming during application and cure. **04**  
 (2) Which basic materials are used to make a polyester resin?  
 (3) Polyester resin with high chemical resistance are frequently made from  
 (a)ethylene glycol (b)dipropylene glycol (c) bisphenol A  
 (4) List the purposes of adding styrene during the manufacture of polyester resin.
- (c) Give advantages and limitations of FRP. **07**
- Q.2** (a) Define term composites. Explain role of fibers in composites. **03**  
 (b) Explain role of matrix in composites. **04**  
 (c) List and explain about types of glass fibers according to their application and commercial forms of availability. **07**
- OR**
- (c) Draw and explain manufacturing process of glass fiber. **07**
- Q.3** (a) Short note on: Natural fibers. **03**  
 (b) Write note on Gel coat. **04**  
 (c) Explain manufacturing process of carbon fibers with neat sketch(Using PAN as precursors) **07**
- OR**
- Q.3** (a) List the advantages of carbon fibers. **03**  
 (b) List causes and remedies of the following faults during FRP manufacturing : (1) Fish eyes or craters (2) blisters **04**  
 (c) Write a note on: GRP molds. **07**
- Q.4** (a) List factors influencing designing of FRP. **03**  
 (b) Explain Dough or Bulk molding compound. **04**  
 (c) Explain Hand layup techniques with neat sketch. List advantages and disadvantages of it compare to other process. **07**

**OR**

- Q.4** (a) List the different types of fibers arrangement in FRP. **03**  
(b) List the advantages of Resin Transfer Molding. **04**  
(c) Explain filament winding process with neat sketch. **07**

- Q.5** (a) List different types of Glycols used in manufacturing of Polyester resin. **03**  
(b) Explain role of Catalyst, inhibitors and accelerators for matrix material in FRP. **04**  
(c) Explain Vacuum bag and Pressure bag molding process in detail with neat sketch. **07**

**OR**

- Q.5** (a) List the material preparation techniques for FRP. **03**  
(b) List various types of commercially available unsaturated polyester resins. **04**  
(c) Explain Pultrusion process with neat sketch. **07**

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